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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Nobelist Pauling

See Page 307

A SCIENCE SERVICE PUBLICATION

Kodak reports to laboratories on:

pen-and-ink photographs...lowering the dilution limit for alkyd resins...
our contribution to labels that won't smudge

Lines from tones



This was the home of George Eastman, our founder. The 50-room residence is now a world-famous museum of photography. We have not committed the blunder of using the hand of the artist instead of the lens of the camera to depict this shrine of photography. Our purpose here is to point out that photographs can actually be made to look like this. There may even be time between now and Christmas to do your holiday cards this interesting way.

The analytically minded will see at once that we have here a process which, instead of representing the brightness of the elements of the original scene, responds only to brightness gradients above a certain magnitude. Be that as it may, there will also be those of a practical turn of mind who will see here a way of saving a lot of expensive line drawing of technical subjects; or a way to photomechanical reproduction of illustrations that skips the half-tone screen.

For details of the procedure write Eastman Kodak Company, Sales Service Division, Rochester 3, N. Y., and ask for the pamphlet "Kodak Line-Tone Process." No charge.

Thin and odorless

Anybody who keeps up with events in the paint and lacquer business knows that the Shell Oil Company is the pre-eminent producer of odorless solvents. Simple business logic

compels them to put a great deal of research into pushing ever upward the properties and therefore the sales volume of odorless alkyd resin paints. One of the principal ways to push upward in that field is to cut viscosity and keep it down during storage so that the paint will be easy to spray and brush. To the uninitiated it might appear that all you need do is use more solvent, which should be perfectly dandy for Shell. It doesn't work that way. You bump into something called the "dilution limit." Dilute more and your alkyd resin kicks out in the form of a gel.

Now a bright lad in one of our sales departments was digesting his lunch one afternoon when his eye fell on an item in *Chemical Week* reporting Shell's finding that mixtures of glycerol mono- and dioleates act as dispersants for alkyd resins in odorless formulations. Since it is the young man's job to sell our monoglycerides and since he has faith that a straight mono can do anything a mono-di mixture can do, only better, he called in his young lady forthwith and dictated a letter to Shell. Turned out they hadn't realized that concentrated glycerol mono-oleate, with diglycerides, triglycerides, free fatty acid, glycerine, and soap all wrung out by molecular distillation, was available at around 40¢ a pound as our *Myerol Distilled Monoglycerides, Type 70*.

Which made Shell's invention work better—straight mono or the mono-di mixtures? There followed some earnest comparisons in both our laboratories and theirs. Depression of dilution limit and viscosity were measured with various resin formulations and at various temperatures. Naturally, our straight mono won every race.

If you would like to see the data, write for a copy of "Distilled Monoglycerides as Alkyd Resin Dispersants" to Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company).

Smooth and durable skin



Demonstrating his product here is a customer and Rochester neighbor of ours, Mr. E. B. Brewster, President, Labelon Tape Company, Inc. Mr. Brewster has recently gone national in his distribution. He buys thin-gauge *Kodapak IV Sheet*, combines it with other ingredients, and winds up with a pressure-sensitive opaque tape which he has patented. When you write on it with pencil or typewriter, the writing pops out in dense black, protected from smudging beneath a tough skin that is far too glassy-smooth to pick up dirt. Makes a quickly prepared label for drawers, panel boards, machine parts, laboratory ware, and any other objects to which pressure-sensitive tape will stick.

With the writing safe beneath the outer skin, Labelon can make a strong sales point of its resistance to dirt, oil, water, acids, and the curling and yellowing of age. It is therefore important that the skin should be capable of meeting the claims. That it is. Mr. Brewster could doubtless find a cheaper material that looks like our new .002" cellulose triacetate *Kodapak IV Sheet*. Whether he could match its dimensional stability, flatness, and ability to withstand water and other solvents is enough of a question so that Mr. Brewster doesn't want to risk the reputation of his product on the chance.

Labelon Tape is sold by office and laboratory supply dealers. *Kodapak Sheet* is sold by Eastman Kodak Company, Cellulose Products Division, Rochester 4, N. Y.

**This is one of a series of reports on the many products
and services with which the Eastman Kodak Company and
its divisions are . . . serving laboratories everywhere**

Kodak
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GENERAL SCIENCE

Nobel Linus Pauling

Chemist, honored for his work on the forces that hold matter together, may have passport difficulties. Two German physicists awarded 1954 Nobel Prize in physics.

See Front Cover

► FORCES THAT hold all matter together, ranging from forces inside the atom to those that build protein molecules into flesh, hair and blood, are better understood because of the work of Dr. Linus Pauling, chairman of the division of chemistry and chemical engineering at the California Institute of Technology, who was awarded the Nobel Prize in chemistry for 1954.

Structure of the atom as revealed by light emitted by heated materials was one of the fields first explored by Dr. Pauling. This led him to discovery of laws of chemical combination, explained by him in his classic work, "The Nature of the Chemical Bond."

Determination of spiral structure, like the strands of a twisted rope, which make up skin, hair and many other structures of living tissue have won Dr. Pauling recent honors.

He is shown on the cover of this week's SCIENCE NEWS LETTER demonstrating with rope strands how molecules are twisted into the structure of protein.

His recent discovery that some types of anemia are due to defective blood hemoglobin structure opens a new method of attack on diseases like cancer whose causes are now obscure.

Passport Difficulties

► A PASSPORT may not be issued to Dr. Linus Pauling, America's newest chemistry Nobel laureate, when he applies for the permission of the Department of State to go to Stockholm Dec. 10 to receive the world's highest scientific honor.

So effective was the smear of McCarthy upon Pauling in 1952 that only with great difficulty did Pauling get a geographically limited passport to attend scientific meetings in England and France that year. Last year, it is understood, Dr. Pauling was invited to India but could not get a passport for travel in a part of the world that the State Department considered "hotter and more sensitive" than Europe.

With an impressive list of scientific honors, including medals from here and abroad and the past-presidency of the American Chemical Society, Dr. Pauling's researches on the forces that hold matter together, particularly the chemical bond and the structure of protein, rate him as one of the world's great scientists.

If the United States government keeps him at home and he can not travel to Sweden to receive the Nobel prize, it will join with Hitler in using restrictions to try

to punish or force into line political dissenters. Hitler did not allow some of the great German Nobelists to accept their prizes. Mussolini, another dictator, also made it difficult for Dr. Enrico Fermi, then an Italian, to receive his Nobel award.

Shortly before Dr. Pauling had trouble getting a passport in 1952, a concept of molecular structure, called the theory of resonance, which he originated, was denounced by resolution at a Soviet chemical conference. Thus, Dr. Pauling found himself under fire from both the U.S. Department of State and the official upholders of the Communist line of scientific thought.

Dr. Pauling's application for a passport, if denied by the Secretary of State, could go before a passport appeals board, a procedure that Dr. Pauling did not use when his permission to travel to India was denied. Since only about a month's time elapses between the announcement of Nobel prizes and their presentation, any delay in passport issuance might effectively keep Dr. Pauling at home.

Evidently the appeals procedure is so burdensome that it has never been used, so far as is known. The State Department considers passport matters confidential.

Dr. Pauling was born in Portland, Ore., in 1901 and since 1922 has been associated with the California Institute of Technology where he is chairman of the chemistry and chemical engineering division. Among many honors he received the Presidential Medal for Merit for scientific services to the government during World War II.

When Dr. Pauling attempted a second time to get a passport in 1952, he said that "refusal of a passport to me would consti-

tute the unjustified interference by the government not only with the freedom of a citizen, but also with the progress of science." At that time he was informed that his "anti-communist statements have not been sufficiently strong." He has denied that he had ever been a communist.

If a passport for Dr. Pauling is not forthcoming, vigorous protests may be expected from scientists, whether liberals or conservatives. It will play into the hands of enemies of America abroad.

But the State Department may be more afraid of the reaction of McCarthy and others in Congress than they are of scientists and overseas opinion.

The granting of a passport is at the discretion of the Secretary of State and is not controlled by the McCarran-Walter Act that has made it so difficult for so many foreign scientists to get visas for visits to the United States.

Many of the difficulties of American scientists in getting passports and foreign scientists in getting U.S. visas do not come to public attention.

Some of the meetings and conferences held in the United States are making a practice of attempting to "clear" the foreign scientists with the State Department before inviting them to be sure that they will be allowed in the country.

Even then almost every meeting with any considerable number of foreigners will have a "no-show" whose visa has not come through for some reason or other. It does not help to have delays laid to the slowness of a clerk in one of our consulates abroad, even when that is the explanation.

Some international meetings were moved out of the United States, in some cases to Canada.

The practice of making it hard for liberals or anyone who has been red-baited is a kind of anti-intellectualism that has shown itself in the Oppenheimer and Condon cases as well (and this applies equally well for either Condon).

If some other government were doing it, Americans would be horrified.

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GENERAL SCIENCE

Two Atomic Pioneers

► TWO PIONEERS in the conversion of solid matter into invisible energy and vice versa have been jointly awarded the 1954 Nobel Prize in physics.

They are German-born Max Born, 72, a naturalized British citizen now living in Heidelberg, West Germany, and Walter Bothe, 63, of Heidelberg University.

In 1931, Dr. Bothe and Dr. H. Becker tapped the energy of the atomic nucleus. They bombarded a beryllium target with alpha particles, causing the beryllium to emit X-rays of considerably more power than the bombarding particles.

Commenting on these experiments, Prof. Arthur H. Compton foresaw the possibility

of getting useful energy from the atom, now a reality.

Prof. Born was one of the first physicists to attempt to reconcile classical physics with quantum mechanics, in order to explain the structure of the atom, work basic to today's atomic piles and hydrogen bombs.

Prof. Born was cited for his fundamental research in quantum mechanics, particularly his statistical interpretation of the wave function.

Prof. Bothe was honored for the discoveries resulting from his method of coincidence counting. By this technique, two Geiger-Muller tubes are connected in series,

and only those atomic reactions making both tubes conducting simultaneously are recorded.

Coincidence counting was used by Prof. Bothe and the late Dr. Hans Geiger to establish that cosmic rays observe the prin-

ciple of energy conservation. Some physicists in 1925 thought that energy was not conserved in the individual scattering process, but only as the average for many such processes.

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PHYSICS

Experiments Explained

By PROF. W. BOTHE

► Our experiments show that energy is gained if any alpha particle is shot into the beryllium nucleus. That is to say, by addition of an alpha particle to the beryllium nucleus, a carbon nucleus of atomic weight 13 is produced which contains less energy than the two original nuclei together.

These experiments give a hint as to the way in which the building up of the atom nuclei actually takes place in the universe: The heavier nuclei are produced by steps from the lighter.

The hypothesis which Dr. Robert A. Millikan has made to explain the "ultrarays" (cosmic rays), that the heavy nuclei are formed direct by the sudden combination of a great number of protons and electrons, is accordingly very improbable.

In still another connection the gamma radiation from beryllium is of interest in connection with the problem of the cosmic rays. The new rays are much harder than the known radioactive gamma rays, their penetrating power approaches close to that of the softest components of the cosmic rays.

Thus in the beryllium rays one can study the properties of a gamma radiation which has approximately the penetrating power

of the cosmic rays. As is well known, my earlier experiments with Prof. Werner Kollhorster (see SNL, Feb. 1, 1930, p. 76) showed that the properties of the cosmic rays are very different from those of a gamma radiation, and that the cosmic rays behave rather as a corpuscular radiation.

Dr. H. Becker and I have now carried out the same experiments with the gamma rays from beryllium; it turns out that these still behave completely like a normal gamma radiation and quite differently from the cosmic rays.

This is further strong support for the idea that the cosmic rays have a particle-like nature in the lower layers of the atmosphere.

A series of other light elements, as well as beryllium, can be artificially excited to gamma ray emission. The production of artificial gamma rays is just as general a phenomenon as the breaking up of atomic nuclei.

In this radiation we have a means of studying the structure of the lighter atomic nuclei; we are standing at the threshold of a "nuclear spectroscopy."

Indeed the light atom nuclei are of special interest.

(Reprinted from SNL, March 12, 1932, p. 159.)

Science News Letter, November 13, 1954

PARASITOLOGY

Amebic Partnership

► AMEBAS, THE germs that cause amebic dysentery, cannot survive, much less cause dysentery, without the aid of other, smaller microorganisms.

This discovery, made with the aid of germ-free guinea pigs reared at the LOBUND Institute of the University of Notre Dame, Ind., was reported by Bruce P. Phillips, medical protozoologist of the U. S. National Institutes of Health, Bethesda, Md., at the meeting of the American Society of Parasitologists with the American Society of Tropical Medicine and Hygiene in Memphis.

Associated with Mr. Phillips in the research were: Drs. W. H. Wright and C. W. Rees, also of the National Institutes of Health, and Miss P. A. Wolfe and Drs. H. A. Gordon and J. A. Reyniers of the University of Notre Dame.

Germ-free guinea pigs and conventional guinea pigs that harbor the common intestinal bacteria were used in the experi-

ments. Both groups were inoculated with bacteria-free amebas.

The scientists reported that none of the 35 germ-free animals developed amebic dysentery, where 34 of the 37 conventional animals came down with the disease, and the remaining three were shown to harbor the infecting agent when sacrificed.

In another experiment, two series of germ-free animals were fed respectively with single species of two common intestinal bacteria, *Escherichia coli* and *Aerobacter aerogenes*, prior to inoculation with bacteria-free amebas. All of these animals also developed acute amebic disease with typical lesions.

These findings supply concrete evidence for the first time that bacteria have a role in the experimental production of disease by the agent of amebic dysentery. Whether this relationship involves more than two species of bacteria is not yet known.

The results also suggest that the value of

certain broad spectrum antibiotics in the treatment of amebic dysentery may be largely related to their activity against associated bacteria.

The possibility that another organism, not yet identified, may act as an antagonist to the ameba will be investigated in future studies. Existence of such an agent might explain why some individuals who never show symptoms of amebic dysentery are nevertheless carriers of the ameba.

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The average Frenchman drinks 40 gallons of red, white and pink wine a year.

More than 8,000,000 lightning strokes, on the average, strike the earth in one day.

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MEDICINE

Seek Arthritis Cause

While scientists search for basic reason for rheumatoid diseases, both new and old drugs are giving patients relief and helping to control attacks.

► NEW AND old drugs are holding the fort against the rheumatoid diseases, from gout to arthritis, while scientists seek the basic cause of these ailments and a single specific cure.

Progress with both the drugs and the basic research was reported at an American Rheumatism Association meeting in the Clinical Center of the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md.

The newest of the drugs that show promise are on trial at this national arthritis institute.

Gout, said to be the oldest known disease of man, can now be effectively attacked by fast-acting drug called phenylbutazone, Dr. Charley J. Smyth of the University of Colorado School of Medicine, Denver, reported.

"Although there is no known cure for gout," Dr. Smyth said, "the control of the frequency and severity of acute attacks is now quite satisfactory. In contrast to other forms of arthritis, the treatment of gout is relatively effective and with the acute attacks properly managed the results are frequently dramatic."

In his investigation, Dr. Smyth studied the effect of phenylbutazone at various blood levels upon the blood and urinary uric acid in 10 gouty and eight non-gouty arthritics.

A step-wise fall in blood uric acid to normal," Dr. Smyth said, "occurred in all but two of the gouty patients. The excretion of uric acid was increased in all but one patient and the maximum output occurred before the maximum fall in the blood level."

Dr. Smyth said clinical benefits usually began within a few hours and that the majority of patients experienced a complete remission in 48 hours or less. He said the new drug was found to be effective in patients resistant to colchicine, a drug that has been used in the treatment of gout since as far back as 1500 B.C.

The basic problem in arthritis, scientists now believe, exists in the connective tissue, the web-like framework which holds the human body together. Inflammation of this tissue is known as arthritis when it exists in the joints. When it exists elsewhere in the body, it is known as rheumatism or by some other specific name such as rheumatic fever.

For early treatment of rheumatic fever, aspirin combined with one of the adrenal or pituitary gland hormones was suggested by Dr. Edward E. Fischel of the Bronx Hospital and Dr. Charles W. Frank of Presbyterian Hospital, New York. Giving an adrenal or pituitary hormone over a long

period "may result in serious toxicity," they warned.

On the other hand, they said, short-term treatment with the hormones, cortisone, hydrocortisone or ACTH, is almost always followed by a flareup of rheumatic inflammation. To guard against such flareups, they recommend prolonged and uninterrupted use of aspirin.

A newly refined test for rheumatoid arthritis that is 92% accurate was reported at the meeting.

The test, using sensitized sheep cells and a euglobulin blood fraction taken from an arthritis victim, is still in the research stage. It was developed by The Study Group on Rheumatic Diseases of the New York University College of Medicine.

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PUBLIC HEALTH

Simple Paper Method Detects Unseen Smog

► A RELATIVELY simple way of detecting "smog" even when the air seems to be clear has been discovered by Drs. Bernard D. Tebbens and Jack D. Torrey of the University of California School of Public Health, Berkeley.

The method is paper chromatography, used in many laboratories to determine very small amounts of chemicals. Development of a colored spot on special paper when suitably treated material is placed on the paper tells the chemist what chemical is in the material.

The California scientists filtered samples of San Francisco Bay Area air and put the solid particles collected on the filter on the paper.

Salts of acetic and formic acids were discovered by this method in the San Francisco air. These gases were also found in the exhaust gas of a relatively new automobile, an incinerator, a gas fire and a wood fire. Raw natural gas, on the other hand, did not contain any filterable acetate or formate.

Smog, the scientists state in *Science* (Oct. 22), may be present even when there is no foginess to reduce visibility. The reduced visibility may be simply the result of water condensed on normally present nuclei.

A fluorescent, oily material was also discovered in the San Francisco air during several "characteristic air pollution episodes." This fluorescent oil and acetic and formic acids have also been found by Dr. Torrey in a sample of filtered air from Denver.

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ATOMIC-AGE WORKER — Plastic protective clothing filled with compressed air is in use in Britain's atomic energy research establishments and production plants. It provides the wearer with protection against radioactive dust and particles.

TECHNOLOGY

Postmen Walk Around on New Shoe Leather Test

► "NEITHER SNOW, nor rain, nor heat" stayed Philadelphia postmen's insoles from outwearing original outsoles and resoles to prove that a new technique in tanning makes shoes last longer.

The walking test of daily wear by these "swift couriers" lasted from nine to 12 months and showed that insoles treated with basic aluminum acetate increases sole durability almost 70%.

Leather, first tanned normally with vegetable extracts, is then retanned with basic aluminum acetate. This chemical builds up resistance to acid deterioration, moist heat and mold.

Laboratory tests showed alum-treated leather 81% better in tensile strength. The postmen's walking experiments showed that after original outsoles and two resoles were worn through, 85% of the alum retanned insoles were still worth repairing. Only 49% of the ordinary insoles were in similar condition.

This new development in leather tanning can easily fit into the regular tanning operations, state the U. S. Department of Agriculture chemists C. W. Beebe, W. F. Happich, W. S. Kip, and J. S. Rogers, who perfected the new process.

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BIOLOGY

Rabbits Menace Food

Importation of European rabbit, an animal with a destructive appetite, threatens our food supply, although no official action has so far been taken.

► AMERICA'S FOOD supply is threatened with the most destructive animal menace in its history and nothing is being done about it.

The European rabbit, which has already ravaged Australia and New Zealand, has been recently introduced into Pennsylvania by sportsmen.

Imports of this rabbit into the United States have heretofore been banned by Federal law, but the sportsmen have skirted this protective measure by transporting the rabbits onto the continent from the San Juan Islands off the coast of the State of Washington, where these pests have lived in isolation since 1900.

Unless the state governments in this country act immediately, scientists say that American farmers face the worst animal enemy in agricultural history.

The European rabbits that were introduced into Pennsylvania for sport have already lived through one winter. It is also believed that the rabbits are now being introduced into other states by hunters.

Raleigh Moreland, assistant chief of game management for the State of Washington Game Commission, disagreed with government wildlife experts who have become alarmed over the introduction of the European rabbit to the continent.

He told SCIENCE SERVICE that the European rabbit has not hurt the economy of the San Juan Islands in any way. Nor have the rabbits which have been brought to that state from the Islands, either accidentally or intentionally, been abnormally injurious.

Mr. Moreland stated that the State of Washington Game Commission will not take action to prohibit the exportation of the rabbit at this time. He suggested that any state worried about the rabbit could easily place an embargo on its importation.

The European rabbit is a "non-classified game animal" in Washington State and therefore its use for any commercial purpose is unrestricted.

Previous efforts in other countries to eliminate the European rabbit scourge have all but failed. From the original 24 rabbits imported into Australia in 1859, there are now an estimated 2,000,000,000.

The European rabbit eats everything in sight. It also burrows holes two to eight feet deep. It causes hundreds of millions of dollars worth of damage to grazing lands, field crops and scenery each year in England, Australia and New Zealand. England considers the European rabbit second only to the common rat as its most serious animal problem.

At present, control of this animal cannot be provided by the Federal Government.

The U. S. Department of Agriculture was not even aware that the rabbit had been introduced into Pennsylvania. The Department of Interior does not have the necessary jurisdiction to intervene on behalf of the farmers, but officially states that "it is a very serious problem."

There is no legal basis for prohibiting the transportation of the rabbit from the San Juan Islands to the rest of the continental United States.

Only if the State of Washington in particular, and other state governments, imposed a ban on the exportation or importation of the European rabbit, can American agriculture effectively deny this four-legged menace an opportunity of literally eating us out of house and home.

The Interior Department explained that if a state banned the rabbit's importation or exportation, then the same Federal law, the Lacey Act, that prohibits their importation from other countries would become effective. It would then make it illegal to transport the rabbit in interstate commerce.

Originally a native of Spain and North Africa, the European rabbit has been exported for sporting purposes into other parts of the world.

It is smaller in size than the brown hare, measuring 11 inches in length and averaging three and one-half pounds in weight. Unlike our cottontails, the European rabbit digs burrows. It is the ancestor of tame rabbits.

The European rabbit has a long history of destruction.

As early as 2,000 years ago, the Romans stocked the Balearic Islands off the coast of Spain with the European rabbit. The rabbits not only undermined the buildings, but ate all the vegetation on the Islands.

The European rabbits were brought first to Smith Island, one of the San Juan group, in Puget Sound by an enterprising light-house keeper who wanted a source of fresh meat.

In 1924, the Navy Department called in experts from the U. S. Fish and Wildlife Service to deal with these animals which were undermining the buildings of the Naval radio compass station on the island.

In Australia, the problem has become a major one. In 1887, the Australian Government was offering a 25,000 pounds sterling (about \$125,000) reward for "any method or process not previously known in the colony for the effective extermination of the rabbit."

Up to 1951, the Commonwealth Scientific

and Industrial Research Organization of Australia reported that Australia had failed to deal with the rabbit.

The British, Australians and New Zealanders have tried poisoning, hunting, ferreting, digging, trapping, gassing and, most recently, diseasing the rabbits. In Queensland, Australia, they strung 7,000 miles of reputedly rabbit-proof wire across the land, to no avail.

Most successful method found to eliminate the European rabbit has been the introduction of myxomatosis, a virus disease spread by certain species of mosquitoes.

It has been found effective in eliminating as much as 96% of the rabbit population in some sections of Australia. Use of this germ warfare has saved the Australian wool industry an estimated \$90,000,000 a year from damage caused by the rabbits. This figure does not include the damage done to crops and scenery.

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ZOOLOGY

Camels Do Not Possess Built-in Water Bottles

► CAMELS, CONTRARY to popular belief, do not have specialized compartments for storing water.

However, they are able to stand increases in body temperature of as much as 11 degrees Fahrenheit, which in man and most other animals would cause critical fevers.

Dr. Knut Schmidt-Nielsen and his wife, Dr. Bodil Schmidt-Nielsen, Duke University zoologists who headed a recent expedition to the Sahara Desert, found these and other facts during a study of just how the camel manages to survive in temperatures that would mean death to most other animals.

"When a human being is exposed to heat, perspiration keeps his body temperature at a constant level," Dr. Schmidt-Nielsen said. "The camel, on the other hand, begins sweating only after a considerable increase in body temperature and even then does not drip with perspiration."

"This stinginess with body moisture is one of the reasons that camels can go for weeks and months without a drink of water."

One of the camels used in the study ate only hay and dried dates for 17 days, the scientists reported. He was often in the scorching sun when the temperature was well over 100 degrees Fahrenheit. At the end of the 17 days, the camel had lost one-third of its body weight.

When finally confronted with an unlimited amount of water, the camel downed 20 gallons.

Another camel under study drank 30 gallons of water in 10 minutes.

Collaborating with the Duke couple were Dr. T. Richard Houp of the University of Pennsylvania and Dr. S. A. Jarnum of the University of Copenhagen, Denmark. The expedition was sponsored by the Guggenheim Foundation, UNESCO and the U. S.

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NEW SOUND INTEGRATOR—Rotating around a 500-type telephone set in an acoustic laboratory, the sound integrator measures the sound power and quality of the telephone's ring with calibrated microphones in the hemisphere. J. D. Hubbell of Bell Telephone Laboratories is monitoring the sound output.

ASTRONOMY

Solar Effects on Radio

► ACCURATE PREDICTION of the blackouts and other disturbances that hamper long-distance communication by short wave radio is foreseen, using a new method. Its aim is to take the guesswork out of forecasting geomagnetic disturbances.

For the first time, scientists now have a theory on which to base their forecasts of the giant magnetic storms caused by the charged particles being shot at the earth from the sun. These magnetic storms not only cause blackouts of radio communications, but the brilliant displays of "northern lights," and erratic movements of compass needles.

The charged particles ejected by the sun are focused by magnetic fields above the sun's surface, suggest Dr. Jean-Claude Pecker and Dr. Walter Orr Roberts, director of the High Altitude Observatory, Boulder, Colo.

For the last two months, experimental forecasts have been made on the basis of the new theory. Results so far, Dr. Roberts said, have been "extremely promising."

The High Altitude Observatory scientists are cooperating with radio experts at the radio research laboratory of the National Bureau of Standards, the Central Radio Propagation Laboratory, also in Boulder. There, using the new theory, Standards scientists are also making experimental fore-

casts of geomagnetic activity to see how closely predictions made by two separate groups agree.

Agreement so far has been "encouraging," Dr. Roberts said.

There are two principal sources of the charged particles, or corpuscles, that bombard the earth. One is the active regions, where great sunspots are often formed. The other is the spicules, small gaseous jets that cover the sun's surface.

Corpuscles coming from the spicules and focused by far-distant active regions are the source of the magnetic storms that recur every 27 days. These storms are now predicted by radio experts of the Central Radio Propagation Laboratory by an empirical method, which depends somewhat on the personal experience of the forecaster.

The new theory should eventually result in an objective method, with forecasts being made by punched card machines.

Discovery of the importance of the spicules in producing geomagnetic storms resulted from looking at the white light of the corona, the giant pearly white halo of the sun so spectacular during an eclipse.

Drs. Pecker and Roberts report some of their work on the relation between solar activity and geomagnetic storms in *Science* (Oct. 29).

Science News Letter, November 13, 1954

PSYCHIATRY

Psychiatric Screening Works in Navy Program

► A PSYCHIATRIC selection program, in effect in the Navy since 1941, has proved effective in weeding out recruits likely to break down in service or to be too costly in behavior problems if accepted for Naval service.

"Stated more simply, screening works," four Naval medical officers report to the *Journal of the American Medical Association* (Oct. 30).

The four are: Capt. George N. Raines (MC) U.S.N., Comdr. Cecil L. Wittson (MC), U.S.N.R., Comdr. William A. Hunt (MSC), U.S.N.R., and Lieut. Comdr. Robert S. Herrmann (MSC), U.S.N.

"Military efficiency should be the determining factor in establishing the exact cutting point to be used in selection, since the task is to produce a military establishment that can win wars," they state.

"The final solutions must be economically sound and within the potentiality of the national economy. Thus in utilizing the marginally serviceable man it is necessary to keep in mind such factors as the added expense in training and maintaining him, and the subsequent drain on our national resources through the medical program of the Veterans Administration owing to the higher medical attrition rate among such marginal personnel.

"We have the beginnings of a psychiatric science of manpower," they declare. "A continuing research program investigating all aspects of psychiatric selection should provide scientific answers to the problems posed."

Science News Letter, November 13, 1954

PUBLIC SAFETY

Plastic Industry Should Consider Poison Hazard

► THE PLASTIC industry and the scientists concerned with industrial health are facing serious problems from potential poison hazards, Dr. Rex H. Wilson and William E. McCormick of the B. F. Goodrich Company, Akron, Ohio, charge in *Industrial Medicine and Surgery* (Nov.).

"If the sales potential of a new plastic does not warrant toxicological study, then the product should not be produced," Dr. Wilson and Mr. McCormick declare.

"No industry can endanger the health of its people by knowingly exposing them to toxic materials. It is not enough for research chemists to discover a chemical combination, which will create a new sales masterpiece. The industrial hygienist must also determine the toxicity of the chemicals involved and designate ways and means of handling them safely."

The two Goodrich scientists give in their report what is believed to be the first comprehensive summary of the poison potentials of plastics.

Science News Letter, November 13, 1954

AERONAUTICS

New Airplane Hangar Folds Like Accordion

► A NEW TYPE dismountable airplane hangar that can be constructed in record time by unskilled labor has been designed for the U. S. Air Force at the Institute of Design of Illinois Institute of Technology, Chicago.

The proposed structure, comparable in size to two city blocks, would accommodate six B-36 bombers for maintenance or eight for storage, plus space for a variety of smaller aircraft.

The hangar design features a double cantilever and is based on "space frame" construction principles. Structural elements of the web-like system consist of tubular shapes integrated with a new type of connector joint, creating a three-dimensional, triangulated space frame unit.

The structure permits mass-production and prefabrication of hangar parts for permanent or temporary structures of the highest degree of standardization.

Prefabricated units can be folded like an accordion and shipped to the construction site where they can be locked into the final position quickly by unskilled labor.

There are no key structural points in the design. Bombing the hangar would be like poking a hole in a spider web. Parts damaged by explosions could be replaced quickly without disabling the hangar while repairs are being made.

Science News Letter, November 13, 1954

MEDICINE

New Arthritis Drugs Seen Promising

► PROMISING RESULTS in first trials of two new, partially synthetic drugs for arthritis were reported by Dr. Joseph J. Bunim, clinical director of the National Institute of Arthritis and Metabolic Diseases, at the American Rheumatism Association meeting held at the Institute, Bethesda, Md.

The drugs are called metacortandralone and metacortandrogin. They are steroid chemicals and were developed by the Schering Corporation of Bloomfield, N. J. The first patient to get either of them got his first dose on Aug. 4.

"Both drugs," Dr. Bunim said, "on the basis of relatively short term trials appear to be more satisfactory anti-rheumatic agents than any other compounds thus far known. They are effective anti-rheumatic and anti-inflammatory agents.

"They are three to four times more potent than cortisone and two to three times more potent than hydrocortisone. Observations indicate this higher potency is not accompanied by increased side effects. In fact, the reverse is true.

"The increased potency makes possible a smaller dose. The dose is sufficient to satisfactorily control the arthritis and yet small enough to avoid undesirable side effects. In this way, the new drugs are able to demon-

strate a higher therapeutic ratio than cortisone and also hydrocortisone."

Although the drugs as yet have not caused any of the undesirable side effects common to cortisone, it is not as yet known whether they will in time show some of the limitations of the hormone.

For example, it is yet to be demonstrated whether prolonged use of the drugs will develop a tolerance to them or any side effects not as yet apparent.

"Neither of these drugs," Dr. Bunim said, "is a cure for arthritis, nor are they completely satisfactory; certainly not good enough to encourage complacency."

"All that can be said at this point is that on the basis of these short-term trials on a limited number of patients, these new steroids appear to be better than anything else now available."

Dr. Bunim in these trials was assisted by Dr. Alfred J. Bollet, also of the National Institute of Arthritis and Metabolic Diseases and by Dr. Maurice M. Pechet of the National Heart Institute.

Science News Letter, November 13, 1954

GENERAL SCIENCE

Urge Halt in H-Bomb Tests

► A BAN on H-bomb tests as the first step toward disarmament has been urged by Dr. David R. Inglis, physicist at the Argonne National Laboratory, Lemont, Ill.

The ban would be effective, Dr. Inglis said, because an international monitoring agency could "guarantee that any violation would be unequivocally announced to the world."

Chief value of the proposed ban is that it would slow down the rate of development of new techniques of offense and allow the techniques of defense to come closer to catching up.

Monitoring the air for the radioactive particles that give clues to H-bomb explosions should be by an international agency to prevent propaganda claims. Such an agency would not have to be located in a country where it was not wanted, Dr. Inglis states in the *Bulletin of the Atomic Scientists* (Nov.).

Any violation of the proposed test ban would put other countries on notice that an unlimited arms race would be on again, but while in effect, it would reduce the "attractiveness of sudden aggression."

Offensive weapons are now so far ahead of defensive ones, Dr. Inglis said, that an aggressor could annihilate an enemy country before a retaliatory attack could be launched.

His proposed cessation of H-bomb tests would give scientists some time to work on more effective defense measures. It would also prevent the H-bomb race "from becoming a many-sided affair, for no other powers can independently develop H-bombs without making tests." It would take only "one mistake to destroy civilization as we know it," Dr. Inglis warned.

Science News Letter, November 13, 1954

VETERINARY MEDICINE

Detect Tumors in Living Chickens

► DETECTION IN living chickens of a highly infectious, cancerous disease is now possible.

Heretofore, detection of visceral lymphomatosis, also known as "big-liver disease," has been possible only by post-mortem examination.

The discovery resulted from work being done at Duke University where scientists had found that the virus that causes leukemia in chickens contained an enzyme that would react with the chemical, adenosine triphosphate.

Scientists at the U. S. Department of Agriculture's regional poultry disease laboratory, East Lansing, Mich., found that amounts of this same enzyme increased greatly in the plasma of a chicken during growth of lymphomatous tumors. They were then able to measure this increase by reacting the enzyme, adenosine triphosphatase, with its chemical namesake.

In laboratory tests with healthy looking, but tumorous chickens, the enzyme-activity test gave a correct diagnosis in 40 out of 42 cases. Nearly 300 healthy chickens tested gave negative results.

Like human cancer, visceral lymphomatosis has resisted man's research efforts to find a cure. It is now hoped that the new discovery will help scientists to identify the disease's presence in a chicken to be used in disease-transmission and immunity studies.

It is also hoped that the test will lead to the development of an effective warning device to aid flock owners.

Science News Letter, November 13, 1954

MEDICINE

Anti-Black Eye Enzyme Helps Other Ailments

► "GOOD TO dramatic" results in treating various acute inflammatory disorders with the anti-black eye enzyme, trypsin, are reported by Dr. Harold T. Golden of Herkimer Memorial Hospital, Herkimer, N. Y., in the *Delaware State Medical Journal* (Oct.).

The patients treated suffered from such ailments as acute bronchitis, acute bronchial asthma, bursitis, psoriasis and thrombocephalitis. Dr. Golden reports good results in 81 of 83 patients. The two failures were in the middle ear infection, otitis media, and the kidney inflammation, chronic pyelitis.

He used the enzyme in a solution of purified crystalline trypsin marketed by the National Drug Co. under the name, Parenzyme.

Science News Letter, November 13, 1954

IN SCIENCE

SCIENCE FIELDS

PARASITOLOGY

Preserve Malaria Germs In Test Tube by Freezing

► MALARIA GERMS can be kept alive without benefit of humans or mosquitoes by low temperature freezing, Drs. Geoffrey M. Jeffery and Robert C. Rendtorff of the U. S. National Institutes of Health, Bethesda, Md., announced at the meeting of the American Society of Tropical Medicine and Hygiene in Memphis.

Malaria parasites have been successfully preserved for as long as 110 days by use of their method. It involves sterile dissection of infected mosquito glands, suspension in sterile saline or serum, and rapid freezing by immersion of vials in a solid carbon dioxide-alcohol bath. The frozen samples are maintained at about minus 70 degrees centigrade.

Of 29 such samples that have been tested, 24 produced infections, indicating that the malaria parasites remain alive and capable of causing disease. All failures could be explained by low-grade mosquito gland infections, immune status of recipient, or defective sample container.

Science News Letter, November 13, 1954

ORNITHOLOGY

Wildlife Research Aid: Leg Bands for Birds

► THAT METAL band around the leg of a wild game bird brought to bag this fall is a valuable aid to research on wildlife.

The Fish and Wildlife Service expects hunters to mail in recovered bands from wild game or other migratory birds, along with information about where and when the birds were shot.

A typical metal band reads: AVISE, Fish & Wildlife Service, Write Washington, D. C., USA, 527-18799.

The word AVISE, explained Allen J. Duvall, an ornithologist with the Service, is Spanish for "notify." It is also close enough in pronunciation for the same word in French, "avis." This is necessary because migratory birds are often found from French-speaking Canada to countries in the West Indies and Central America where both these languages are spoken.

The word AVISE has caused many persons in the United States to write to the Fish and Wildlife Service informing them that they have misspelled the word "advise."

Before the word write was put on the metal bands, Mr. Duvall said, it was feared that many persons from as far away as northern South America would telephone or telegraph collect that they had recovered a band.

The numerals are the particular bird's

serial number. All bands put on birds in the United States, Canada, and West Indies and in many of the Central and South American countries are catalogued.

In effect, the band gives a bird's biography. They are used to learn more about the habits and movements of migratory birds.

It has been estimated that 500,000 birds are banded each year, and that a total of 7,000,000 birds have been tagged to date.

The bands often reveal much about the bird's traveling habits. A young pintail, for example, was banded in Labrador on Sept. 7, 1951, and was caught in England two weeks later on Sept. 25, 1951.

The oldest record of longevity, determined by leg bands, was a Caspian tern that was banded in Michigan in the summer of 1925 and taken as a scientific specimen in Ohio in 1951, 26 years later.

Each band returned to the U. S. Fish and Wildlife Service is answered with a letter telling of the bird's banding and any additional biography that may have been collected from other reports of the leg bands.

Science News Letter, November 13, 1954

MEDICINE

High Blood Pressure Among Non-Smokers

► MORE HIGH blood pressure patients have been discovered in non-smokers and non-salters than in fellow employees of similar age.

The finding came in a study of some 800 employees over the age 40 in the Wilmington office of E. I. du Pont de Nemours and Company. The study was made by Dr. C. A. D'Alonzo, assistant medical director of the company, and Dr. P. M. Densen of the Health Insurance Plan of New York, and Miss Mary Grace Munn of the University of Pittsburgh Graduate School of Public Health.

The non-salters were those who had decreased their salt intake for the 10 years prior to the study. Whether they had reduced their salt intake after they had developed high blood pressure was not learned from the study. Neither is there any clear explanation for more non-smokers having high blood pressure. It may be that these employees, also, had stopped smoking when high blood pressure developed.

Object of the study was, to see whether any factors in an employee's past history and family history at the time of first employment would point to possible future development of high blood pressure.

The family history does have a bearing, the study showed. A person is more likely to develop high blood pressure if one or both parents have it than when neither parent has it. High blood pressure in the mother increases the chances of high blood pressure in the children slightly more than high blood pressure in the father does.

The study is reported in *Industrial Medicine and Surgery* (Nov.).

Science News Letter, November 13, 1954

AERONAUTICS

Floating Heliport Rests on Water

► QUICK, CONVENIENT air service from the heart of your home town is seen in the floating heliport.

It has been built atop a six-story flat-roofed office building in Phoenix, Ariz., and consists of an aluminum platform floating in two inches of water. The building has not been re-stressed for its heliport role, yet the roof has not caved in. Allen C. Thomson, 34-year-old aeronautical inventor, explains that the 11-by-16-foot float distributes the landing shock from the helicopter to the entire roof area covered by the diked-in water. This eliminates pinpoint stresses that, in the past, have required extensive changes in the very frame of buildings receiving concrete heliports on their roofs.

Although the honeycombed aluminum platform weighs only 800 pounds, it is capable of handling 30,000 pounds per square foot in the Phoenix installation. The biggest landing platform would require a water depth of only four inches, Mr. Thomson declared.

When a helicopter lands upon it, the floating heliport station applies uniform pressures of five to 20 pounds per square foot to the building roof. Since most buildings are already stressed for about 40 pounds per square foot, no additional stress capacity need be installed.

Even the largest helicopter, which weighs about 50,000 pounds, could land safely on the floating platforms.

Mr. Thomson described a "typical" heliport installation as measuring 100 by 200 feet. It would weigh 50 tons. An equivalent concrete landing strip would weigh 1,400 tons and cost \$22 per square foot. The Phoenix installation, which was custom built, cost only \$10 a square foot. Mass produced, the heliports should cost only \$5 per square foot, the inventor estimated.

Science News Letter, November 13, 1954

CHEMISTRY

Long-Lived Radioactive Aluminum Manufactured

► A LONG-LIVED radioactive isotope of aluminum has been manufactured by scientists at the Carnegie Institute of Technology in Pittsburgh.

The new isotope, aluminum 26, takes about a million years to lose half its radioactivity. Previously known isotopes of aluminum had lifetimes of only a few minutes.

Discovery of aluminum 26 will allow it to be used in radioactive tracer studies, and makes possible the application of isotopic tracing to all known chemical elements.

The ordinary metal used for construction materials and household utensils is aluminum 27. Aluminum 26 was made by atomic bombardment of a magnesium target. Dr. Truman P. Kohman headed the group of Carnegie scientists working on the project.

Science News Letter, November 13, 1954

TECHNOLOGY

Sun Harnessed for Cooking

Millions of families in underdeveloped areas could enjoy a better standard of living with a sun stove. Scientists are at work to build one that these people can afford.

By RICHARD MAGAT

Science Service Correspondent

► SCIENTISTS HAVE launched a concentrated effort at harnessing the sun for cooking.

Sunshine is the cheapest available "fuel" for millions of families in underdeveloped areas who cannot afford shiny new stoves or even coal.

A solar energy scientist at New York University, Dr. Maria Telkes, has conceived a practical, economical stove that cooks by sunlight. Now the Ford Foundation is backing the project with a grant of \$45,000 to the Research Division of NYU's College of Engineering for detailed research and development of a sun stove.

Why all this activity about one of man's oldest and simplest chores?

First, many areas like India either lack their own fuel reserves or the means to import fuel on a large scale. As a result, low-income families have used the only fuel available—the vegetation around them. The total effect of deforestation and soil erosion from this practice is tremendous.

Secondly, as vegetation became scarce, dried animal dung became the only remaining cheap, available fuel. It is estimated that, in India, 78% of the yearly fuel requirements are filled by dried cow dung.

Besides the health and esthetic drawbacks to this practice, it plays havoc with agriculture in areas that already suffer from food shortages and periodic famines. The natural animal fertilizer now burned as fuel could revitalize the soil and materially increase crop yield. Experts estimate that the use of animal fertilizer for cooking now cuts the productivity of the land by nearly half.

Investigate Social Aspects

The NYU project ranges beyond engineering aspects. Dr. Ethel Alpenfels, professor of social anthropology, is reviewing the social and economic patterns in countries of the Near East and India. Concurrent with the scientific development of the cooker, therefore, the social, psychological and economic effects of introducing and integrating such a new device into the customs of the peoples will be determined.

Also important, and another area of the study, is an industrial and materials survey of these countries. What materials are available for incorporation into the sun stove? What skills are available for its manufacture? What is the country's industry potential for its mass production?

Cost is a crucial factor in introducing

solar cooking to underdeveloped areas. The most successful solar cooker developed to date involves a costly parabolic reflector.

Dr. Telkes' stove design eliminates the need for parabolic reflectors. Furthermore it has the advantage of retaining cooking heat for an hour or so after the sun has gone down, the time when the evening meal is cooked. For another thing, its heat-storing feature largely eliminates the necessity of changing the position of the stove frequently to catch direct sunshine.

Her stove is a closely insulated box, roughly triangular in shape. Four ordinary flat mirrors fan out from the tilted face of the stove. At the rear of the stove is a removable drawer through which the food is placed.

The mirrors reflect sunlight down through the tilted face of the stove, concentrating it in the interior, which is filled with special heat-absorbing chemicals.

Principle of the stove is "heat of fusion," or "heat of transformation." All materials when melting require large amounts of heat to change from solid to liquid forms. During melting, the temperature of the material does not change but remains at the melting point. The problem in the solar stove and other heat storage devices is to devise materials with relatively high heats of fusion.

In the sun stove, therefore, the sun's heat produces a succession of changes in the heat-storage salts from solid to liquid state. The changes give off the heat used for cooking.

Preliminary models of Dr. Telkes' stove have developed temperatures up to 300 degrees on days when outdoor temperature was under 70 degrees Fahrenheit.

Continued on p. 319



SUN-COOKED HAMBURGER—This solar oven is shown here being tested on an October day of moderate sunshine. The oven's temperature gauge is topping 300 degrees Fahrenheit, although it is shirt-sleeve weather. Dr. Maria Telkes, its inventor, is sampling a morsel while a technical assistant, Fatolah Sotoodeh of Iran, prepares to run an independent analysis of sun-cooked food.

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MAR 1

Books of the Week

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THE ADVANCEMENT OF SCIENCE: Vol. XI, No. 42—British Association for the Advancement of Science, 145 p., illus., paper, 75, 6d. Addresses delivered at the annual meeting of the British Association in Oxford, Sept. 1-8, 1954.

ALL THE YEAR ROUND—Mabel Louise Robinson—*Harper*, 150 p., illus., \$2.50. A novelist describes contacts with creatures, wild and tame.

AMERICAN SCIENCE AND INVENTION: A Pictorial History—Mitchell Wilson—*Simon and Schuster*, 437 p., illus., \$10.00. Intended to show how "inspired tinkers converted a wilderness into the wonder of the world."

ASIA, EAST BY SOUTH: A Cultural Geography—J. E. Spencer—*Wiley*, 453 p., illus., \$8.50. The major theme of the book is that, in particular environments, particular cultures have evolved with local peculiarities and regionalisms that distinguish the countries of the area.

ASTM STANDARDS ON ADHESIVES (With RELATED INFORMATION): Specifications, Physical Tests, Definitions—ASTM Committee D-14—*American Society for Testing Materials*, 205 p., illus., paper, \$1.75. Bringing together all of the ASTM test methods, definitions, specifications and recommended practices pertaining to adhesives.

ASTM STANDARDS ON COAL AND COKE (With RELATED INFORMATION)—ASTM Committee D-5—*American Society for Testing Materials*, 155 p., illus., paper, \$2.25. Of particular interest to utilities companies and others who buy coal and coke in large quantities on specification. Eight appendixes give proposed methods of test.

ATOMIC SCIENCE, BOMBS AND POWER—David Dietz—*Dodd, Mead*, 316 p., illus., \$4.50. The science editor of the Scripps-Howard newspapers explains atomic energy for the layman and tells what he thinks it means for the future of civilization.

BASKET MAKER II SITES NEAR DURANGO, COLORADO—Earl H. Morris and Robert F. Burgh—*Carnegie Institution of Washington*, Publication 604, 135 p., illus., cloth \$4.75, paper \$4.25. A record of archaeological excavations conducted by the Carnegie Institution of Washington in 1938 and 1940. The sites represent the earliest known stage of the Basket Maker-Pueblo culture cycle, dated by tree rings at 46 A.D.

BIBLIOGRAPHY AND INDEX OF GEOLOGY EXCLUSIVE OF NORTH AMERICA: Vol. 18—Marie

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Siegrist, Mary C. Grier, and Marcia Lakeman—*Geological Society of America*, 599 p., \$5.50. Covering the literature published in 1953 as well as titles published prior to that date not cited in previous volumes.

BREAD: The Chemistry and Nutrition of Flour and Bread with an Introduction to Their History and Technology—Lord Horder, Sir Charles Dodds and T. Moran—*Constable (Macmillan)*, 186 p., illus., \$3.75. Addressed especially to the doctor, science teacher, social worker and dietitian.

A BUDGET OF PARADOXES: Reprinted With the Author's Additions from the Athenagorum—Augustus De Morgan—*Dover*, Unabridged edition of the second edition, two volumes bound as one, edited by David Eugene Smith with a new introduction by Ernest Nagel, 789 p., \$4.95. A survey of "the huge debris of barren intellectual labor that borders the winding path cut by modern science through the jungles of human ignorance."

CANARY TIPS—Cliff Newby—*All-Pets*, 56 p., illus., paper, 80 cents. Telling about the care and history of this pet, popular for over 300 years.

THE CARNEGIE UNIT: Its Origin, Status, and Trends—Ellsworth Tompkins and Walter H. Gaumnitz—*Govt. Printing Office*, Office of Education Bulletin 1954, No. 7, 58 p., paper, 25 cents. Reexamining the devices for measuring high school work in terms of time spent in the classroom.

THE COLON: ITS NORMAL AND ABNORMAL PHYSIOLOGY AND THERAPEUTICS—M. L. Tainter, Ed.—*New York Academy of Sciences*, Annals, Vol. 58, Art. 4, 248 p., illus., paper, \$4.50. Discussing the physiology and pharmacology of colonic disorders and their therapy.

DESIGN OF THE UNIVERSE: The Heavens and Earth—Fritz Kahn—*Crown*, 373 p., illus., \$5.00. A book intended to present a popularization of our knowledge about the structure of the universe.

DIRECTORY OF INDUSTRIAL RESEARCH LABORATORIES IN NEW YORK STATE, 1954—*New York State Dept. of Commerce*, 126 p., paper, free upon request to publisher, 112 State St., Albany 7, N.Y. Listing more than 650 commercial and private industrial research laboratories in New York state.

ELEMENTS OF ECOLOGY—George L. Clarke—*Wiley*, 534 p., illus., \$7.50. Dealing with the inter-relations of plants and animals, on both land and water.

A HISTORY OF BIRDS—James Fisher—*Houghton Mifflin*, 205 p., \$3.75. Although designed for university students, this book is a valuable aid for any serious student of ornithology.

JEFF WHITE: Forest Fire Fighter—Lew Dietz—*Little, Brown*, 210 p., illus., \$2.75. Telling for children the adventures of a boy who is on hand to watch the Forest Service men battle fire.

LIFE ON OTHER WORLDS—Sir Harold Spencer Jones—*English Universities Press (Macmillan)*, revised ed., 259 p., illus., \$3.00. This work by the Astronomer Royal of England was originally published in 1940.

METAL PROCESSES AND APPARATUS, MACHINERY, AND TRANSPORTATION EQUIPMENT: Government-Owned Inventions Available for License—

Archie M. Palmer, Chairman—*Office of Technical Services*, 55 p., paper, \$2.00. Containing 657 brief descriptions of Government-owned inventions, this book is the fourth in a series of seven books of patent abstracts prepared from the Index of Inventions maintained by the Government Patents Board.

MODERN FEEDING OF BUDGERIGARS—Cessa Feyerabend—*All-Pets*, 63 p., illus., paper, 75 cents. How to raise shell parakeets and keep them healthy.

PACKAGING ENGINEERING—Louis C. Barail—*Reinhold*, 407 p., illus., \$9.50. A modern package must not only protect the contents from all deleterious outside influences, it must also sell the contents by its attractive appearance. Intended as the standard reference work of the container industry.

PROCEEDINGS OF THE THIRTY-THIRD ANNUAL MEETING—Fred Burggraf and Walter J. Miller, Eds.—*Highway Research Board*, Publication 324, 563 p., illus., \$8.50. Papers presented in Washington, D.C., Jan. 12-15, 1954.

PROPERTIES OF SURFACES—Cecil V. King, Ed.—*New York Academy of Sciences*, Annals, Vol. 58, Art. 6, 250 p., illus., paper, \$3.50. Containing the results of inquiries into special phases of surface reactions.

THE STATUS OF MULTIPLE SCLEROSIS—Harold R. Wainerd, Ed.—*New York Academy of Sciences*, Annals, Vol. 58, Art. 5, 180 p., illus., paper, \$4.50. The results of research in biological, pathological, biochemical and clinical methods of treatment are reviewed and brought up to date.

THE STORY OF MAN: From the First Human to Primitive Culture and Beyond—Carleton S. Coon—*Knopf*, 437 p., illus., \$6.75. A noted anthropologist describes in non-technical language the main events of human history "from the time that man appeared on the face of the earth until the present moment, when he has the power to destroy it."

SUICIDE AND HOMICIDE: Some Economic, Sociological and Psychological Aspects of Aggression—Andrew F. Henry and James F. Short Jr.—*Free Press*, 214 p., illus., \$4.00. A study by sociologists of the relation between suicide and murder and other variables, such as the business cycle.

VOTING: A Study of Opinion Formation in a Presidential Campaign—Bernard R. Berelson, Paul F. Lazarsfeld and William N. McPherson—*University of Chicago Press*, 395 p., illus., \$7.50. Reporting several studies of how people vote and why.

Science News Letter, November 13, 1954

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FOR THE MOST UNUSUAL PERSON
ON YOUR CHRISTMAS
LIST



IN EACH 1955 gift package, there will be several objects of science, and with each object, a museum-style legend card, which will tell at a glance what these THINGS of science are. Included will be the sheets of explanation, that give the interesting details of discovery, of development, of manufacture, and that tell how to perform unusual experiments with the contents of the package.

Since late in 1940, packages like these have been going forward to members of the THINGS of science group. Glance over this list, then decide whether a membership which brings monthly packages on subjects as widely varied as these, isn't just the thing for that most unusual person on your Christmas Gift list.

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Coins
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Carbon Black
1934 Garden

You know the one who would thank you again and again for such a gift. And if you are not yourself a member, you could hint to someone that you'd like it as a gift yourself.

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Surprises
plus
another
we'll add

The 1955 THINGS of science will be unusual; every month's package will be a surprise. A Christmas Membership to THINGS of science will bring the 12 units of 1955, plus an extra unit which we will select and add to your gift with our compliments, to arrive in time for Christmas. We will make out and mail a Christmas card with your name as donor, announcing your gift. Each membership is \$5 a year, postpaid. You will find a handy order coupon below.

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Mail this order to THINGS of science, 1719 N St., N.W., Washington 6, D. C. for the 12 units of 1955 plus the extra Christmas unit.

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 Please bill me after Christmas

Gift to

PLEASE PRINT _____

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MAKE OUT Christmas Card
TO READ from _____

**Alligators**

► WHAT BETWEEN handbags and shoes and shooting just for fun, the native supply of these interesting reptiles is rapidly diminishing, and only in the Everglades and in some of the wilder regions of the Gulf Coast can one any longer find the 12-foot "grand-daddy 'gators" once boasted by every southern river. Six-footers are still fairly common, however, and four-foot adolescents are thick as sparrows.

However, no one need dread to go about on river sides in the South for fear of being knocked into the water and devoured by an alligator. Authentic cases of attack on human beings by these creatures, formidably jawed and toothed though they are, are even more rare than attested instances of man-eating sharks in American waters.

Alligators are for the most part content with smaller game; incautious fish, turtles, ducks that mistake their still forms for floating logs, and foolish pigs that venture out into shallows.

Alligators are not merely animate inventions of the powers of darkness and evil, designed for the discomfiture of the seeker for climatic paradises. They have their useful work to do. In addition to being scavengers wherever they happen to live, in the flood-menacing and levee-guarded rivers of the South, they are policemen as well.

Bank-burrowing aquatic animals, especially muskrats, constantly endanger the protecting embankments with their mining, and alligators as constantly keep their num-

bers down. For this reason, the people of Mississippi, Louisiana and other southern states desire the protection of the alligator; and the old custom of taking potshots at the floating reptiles from the decks of passing boats is being discouraged.

Whether you see "tame" alligators at an alligator farm, or with luck, a real out-of-door 'gator in a pond or river, they may give you a mild case of the "creeps," for they seem to belong to an earlier and crueler age of the earth. You sometimes hear the remark, "descendants of the dinosaur."

Alligators are not descended from the dinosaurs, though they are cousins to them. The dinosaur line died out completely, leaving the honor of being the largest reptiles to the crocodiles and alligators, which were the lesser people in the Tertiary swamps.

Alligators are pretty strictly an American institution. They are distinguished from their Old-World relatives, the crocodiles, by a number of features. But crocodiles are not strictly Old-World beasts. There are crocs in South America and even the tip of Florida occasionally yields up an authentic crocodile.

A southern delicacy that not many people have the chance to try is 'gator-tail steak. Running down the length of the tail, around the spinal column, is a thick cylindrical column of muscle. When an alligator is killed for his leather, the hunters frequently cut out a section of this, slice it into suitable thicknesses, and broil it over a swampwood fire—first-class eating, so it is reported.

Science News Letter, November 13, 1954

BIOLOGY**Awards for Summer Study**

► THE ESTABLISHMENT of 20 new awards for summer research in the field of biological science was announced by the Lalor Foundation, Wilmington, Del.

Designed for college faculty members, the awards will be granted to those qualified applicants who are engaged in biological studies in which chemistry or physics play a key role.

In making the announcement, C. Lalor Burdick, director of the Lalor Foundation, said that this is a new type of aid to science and science education. The awards permit the recipients to study and do research of entirely their own planning and choice of place to work.

Each grant carries a stipend not to exceed \$900 for single men and women and not to exceed \$1,100 for married persons.

In outlining the new awards program for 1955, the Lalor Foundation also announced that it will continue its eighth year of underwriting awards for postdoctoral summer fellowships administered by the Marine Biological Laboratory at Woods Hole, Mass.

The Foundation is discontinuing its previous program of awarding fellowships for full-year undergraduate and graduate work.

MEDICINE**Blood Pressure Lowered By Drug in First Trials**

► GOOD RESULTS with first trials of a new blood pressure lowering drug that is taken by mouth were announced by Dr. Keith S. Grimson of Duke Medical School and Hospital, Durham, N. C., at the meeting of the American College of Physicians in Philadelphia.

The new drug is called Su-3088. Chemically, it is dimethylaminoethyl tetrachloroisoindolene bismethochloride. It was synthesized by Dr. Albert J. Plummer and associates at the Ciba Foundation, Summit, N. J.

One small tablet of Su-3088 taken before breakfast reduces blood pressure to normal throughout the day, Dr. Grimson found in trials with 15 patients.

"This drug is not for mild hypertension (high blood pressure) or for severely advanced patients who have coronary, renal or cerebral damage," he said. "It may, however, prove to be helpful for a great majority of hypertensive patients, and at one tablet a day should be a real financial saving."

The drug achieves its blood pressure lowering effect by its action on nerve centers. In this it is like hexamethonium and related compounds. In the trials so far, however, it seems to be more uniformly effective when given by mouth.

Although only small quantities have been available so far, more is now being made.

Science News Letter, November 13, 1954

ROCK CHARTS

These various Rock Charts are visual aids for elementary courses in rock and mineral study. They are practical standard equipment in laboratories and libraries devoted to geology study.

ROCK CHART FOR IGNEOUS ROCKS. Price \$6.50. Size 14 x 22" and contains 77 of all major types of igneous rocks. With the aid of this Chart, the untrained person can identify almost all igneous rocks and at a glance understand their relationships to all other igneous rocks. **ROCK CHART FOR SEDIMENTARY ROCKS.** 14 x 22", 40 specimens \$6.50. **ROCK CHART FOR METAMORPHIC ROCKS.** 14 x 22", 32 specimens \$6.50. **ROCK CYCLE CHART.** 14 x 27" \$6.50. **CHART CHEMISTRY OF THE ROCKS***, 14 x 27", \$12.00.

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Questions

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BIOLOGY—How is the food supply of the United States now threatened? p. 310.



GENERAL SCIENCE—Who controls the granting of passports? p. 307.



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Solar Cooking Stove

Continued from p. 314

From 250 to 300 degrees is considered ample for average cooking operations. Higher temperatures needed for frying and browning have been developed in the stove on clear days. The areas for which the stove is intended enjoy direct sunlight most of the year.

The New York University research group believes their stove can be developed so that it can be manufactured to sell for \$5. This is the maximum sales cost estimated by the Hindu Government and the British Committee for Solar Energy Utilization. There is a potential need for 100,000,000 solar cookers in India alone.

The least expensive solar cooker devised to date sells for about \$16. Besides cost and conformity to local cooking custom, the NYU stove will be designed to meet these requirements: durability, ease of operation and cleaning; simplicity and portability; ability to operate in early evening, and little attention required during cooking.

The solar stove is an outgrowth of Dr. Telkes' many years of pioneering in the solar energy field.

Many attempts to develop solar cookers have been made in the last 100 years. Mouchot in France and Adams in India built solar stoves around 1870, but their devices did not become popular despite the fact that Mouchot's work was supported by the French Government. The Smithsonian Museum has exhibited a solar cooking device designed by Dr. C. G. Abbot in 1925.

A cooker being manufactured on a lim-

ited scale was designed by Dr. M. L. Ghai in the Hindu National Physical Laboratory, New Delhi. This employs a parabolic reflector, and while it is suitable for boiling, it is not adaptable to baking.

The NYU project is employing trained personnel from the areas where the solar cooker may be introduced. The first of these is Fatolah Sotoodeh, a graduate mechanical engineer from the University of Teheran, who is currently a candidate for doctor of engineering science in industrial engineering in NYU's College of Engineering.

It is anticipated that some assistance may be obtained from the University of Teheran, the American University of Beirut, the Near East Foundation and appropriate United Nations agencies.

Science News Letter, November 13, 1954

ENGINEERING

Sound in Third Dimension Given Drive-in Customers

► DRIVE-IN THEATERS, Dr. Ralph N. Heacock of the Radio Corporation of America reported to the Society of Motion Picture and Television Engineers meeting in Los Angeles, can now provide stereophonic sound. One speaker brings sound in on the left, the other on the right.

CinemaScope pictures, which ordinarily would broadcast their sound from four loudspeakers in an indoor theater, can be modified to feed the two-speaker drive-in system.

Science News Letter, November 13, 1954

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ORNAMENT MOLDING kit lets you make your own plastic Christmas decorations in as much time as it takes to boil an egg. The kit includes ball, bell and star-shaped molds of heavy zinc-plated steel, and molding crystals. Large, solid plastic decorations are produced when the expandable crystals are inserted into the molds and immersed in boiling water for three minutes.

Science News Letter, November 13, 1954

ELECTROSTATIC GENERATOR for young electrical experimenters is harmless and constitutes no fire hazard, but it startles onlookers with crackling, inch-long sparks and dancing pith balls in a plastic box. When someone touches its charged dome, his hair springs to "attention." The device works on house current.

Science News Letter, November 13, 1954

ILLUMINATED PLAQUES designed as outdoor Christmas decorations for your house are made of vinyl rigid sheets. Light-weight and durable, they depict large colorful figures such as a team of reindeer, 31 inches wide, 25 inches high, towing Santa Claus in a sleigh. They can easily be cleaned with a damp cloth.

Science News Letter, November 13, 1954



FIRE ENGINE toy for Junior is made of a shatterproof acetate plastic, as shown in the photograph. Two buttons on its handheld remote-control box move the truck forward or in reverse. Tilt the control box and same buttons raise or lower the ladder. Separate motors, powered by flashlight batteries, activate the truck and ladder.

Science News Letter, November 13, 1954

ENAMEL JEWELRY package for the adventurous do-it-yourself hobbyist allows him to make enamel designs on copper earring, pin and clasp blanks. The home-made jewelry is fired in a small electric kiln which, using ordinary house current, heats to 1,500 degrees Fahrenheit in four minutes.

Science News Letter, November 13, 1954

TOY "INTERCOM" system permits brother to talk to sister over 50 feet of wire. It consists of two units, each with a four-inch speaker, two-way switch and built-in buzzer. It operates on two D flashlight cells and has proved useful even in the business world.

Science News Letter, November 13, 1954

THREE-DIMENSIONAL GAME of tic-tac-toe provides brain-teasing fun for the whole family. Play is made on all four levels of this plastic set. One marker is placed on any square in turn, the object being to get four straight in any direction. Being able to see all levels makes possible any number of different plays.

Science News Letter, November 13, 1954

DOCTOR'S BAG for children's "medical instruments" is molded completely out of a polyethylene plastic to look and wear just like a real doctor's kit. The bag contains toy stethoscope, spectacles, thermometer, ear flashlight, medical scissors, microscope and hypodermic syringe, all plastic.

Science News Letter, November 13, 1954

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Do You Know?

The chipping sparrow, weighing less than an ounce, is the smallest of all sparrows.

There was a 13% rise in juvenile delinquency cases from 1952 to 1953.

The number of alcoholics in the United States has increased nearly 50% in ten years.

The largest bird having the power of flight is the wandering albatross; one was found with a wingspread of 11 feet, 4 inches.

A study of diabetics whose disease began at age 40 or over indicates that 85% previously had been overweight and that 60% were extremely overweight.

Research reveals that the incisor teeth of a pocket gopher grow at the rate of 46 inches per year, or almost an inch per week, but his incessant gnawing keeps them worn down for practical use.